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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,500	07/23/2003	Bruce F. Monzyk	13505US	1976

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EXAMINER
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DRODGE, JOSEPH W

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/626,500	MONZYK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joseph W. Drodge	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,14,15,18,22-24,27-29 and 32-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,14,15,18,22-24,27-29 and 32-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1205</u> | 6) <input type="checkbox"/> Other: _____  |

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The indicated allowability of claims 1, 14, <sup>15,</sup> 18, 22-24, 27-29 and 32-43 are withdrawn in view of the newly discovered reference(s) to the Conklin et al publications accompanying the Information Disclosure Statement filed with the RCE. Rejections based on the newly cited reference(s) follow.

Claims 1, 14, 15, 18, 22-24, 27-29 and 32-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant Specification at page 10, beginning at lines 14-15 and page 11, beginning at line 12 that the claimed extraction mechanisms of claim 1 concerning hydrolyzing and coagulating into molecular or submicroscopic clusters, are "theories", "rationalization" and beliefs, that are not supported by actual industrial or experimental evidence. Thus one of ordinary skill in the art could not have utilized the Instant Specification to reproduce the claimed mechanisms of hydrolyzing and coagulating.

Claims 33, 39 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of claims 33 and 43, the particular scope and generic meaning of the respective proprietary chemical formulations is unclear, since these formulations have not been precisely defined in the Instant Specification.

Claim 39 is indefinite since it depends from itself.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,14,15,18,22-24,27-29 and 32-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the publication entitled "Demonstration of Chromium (VI) Removal from Wastewater" Presented at the Conference and Exhibition of August 2001 at San Antonio, Texas and presented by Conkle, Rose, Monzyk and Chauhan of Battelle and Cook of the Air Force Research Laboratory in view of Delmas et al patent 6,267,936, Hein patent 5,879,556 and Grayson et al patent 4,888,053.

Conkle et al disclose simultaneous extraction of metal anionic and cationic species (Chromium III and Chromium IV) from a dilute aqueous solution, utilizing a tertiary amine cationic extractant solution, and at a selected pH (see the bottom of page 6 disclosing operating at a pH of about 3) simultaneously extracting the chromium metal cationic and anionic species (see for instance description at page 10 below Figure 7 and bottom of page 15), wherein the ratio of aqueous to extraction solution is above about 4:1 (Table 4 at page 13), followed by separation of a loaded extraction phase from a raffinate aqueous phase reduced in metal anionic and cationic species, followed by separation of the phases using techniques such as stripping (page 4) and chromium concentration (page 12).

The claims differ in requiring that the contact time between contaminated aqueous phase and extraction solution is on the order of 0.1 to 10 minutes as the Conkle et al publication is essentially silent as to this point. However, Delmas et al teach solvent extraction of metal ions from aqueous solutions employing extractants such as tertiary amines (column 7, line 45-column 8, line 9) where the time of contact is on the order of minutes (column 8, lines 35-36). It would have been obvious to have

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operated the process disclosed by Conkle et al using a relatively short contact time of minutes, as taught by Delmas, in order to purify a large amount of aqueous phase in a relatively short time interval.

The claims also differ in requiring the extraction of ions into solvent to occur by mechanisms involving hydrolyzing and coagulation. However, Hein at column 2, lines 30-42 and column 3, lines 20-27, as well as column 3, lines 65-67 involving complexing) teaches that solvent extraction of heavy metal ions such as copper (column 8, lines 12-20), and using tertiary amine extractant (column 4, lines 1-3) involves mechanism of coagulation; while Grayson teaches solvent extraction of heavy metal ions including chromium (column 1, lines 32-42) involving both hydrolyzing (column 8, lines 58-65) and coagulation/agglomeration (column 6, lines 1-20). Hence, one of ordinary skill in the relevant arts would have found it obvious to have considered the claimed hydrolyzing and coagulation as inherent properties imparted by solvent extraction of heavy metals such as chromium using tertiary amines and similar extractants functions by hydrolyzing and coagulation to effect separation of phases.

Regarding claims 14 and 41, Conklin et al disclose the claimed chromium species at pages 10 and 15.

Regarding claims 15 and 22-24, the claimed ratio of aqueous feed solution to extractant solution is suggested by Conklin at Table 4 on page 13.

Regarding claims 18, Conklin et al disclose the effluent as originating from plating type surface finishing operations at page 1 of the Publication.

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Regarding claim 27, Conklin discloses use of a mixer/settler in the contacting at page 4 and also at Figure 12 on page 14 .

Regarding claims 28 and 29, complexing or "ion pairing" and "colloidal capture" is suggested by Hein at column 3, line 64-column 4, line 1.

Regarding claims 32-34, Hein teaches use of a diluent with tertiary amine extractant at column 3, lines 53-68 and column 7, lines 22-58 to facilitate recycling of the extractant for economy and continuous operation of the extracting, the specific diluents recited in claims 34 and 35, are taught at column 6, lines 6-16 of Hein.

Regarding claims 35-37, Hein also teaches use of a modifier at column 5, lines 57-63 to enhance the performance properties of the extraction system, the specific modifiers of claims 36 and 37 are listed at Hein column 5, lines 60-63.

Regarding claims 38 and 39, see Delmas at column 8, line 35 concerning contact times as short as 1 minute.

Regarding claim 40, formation of oxometal ion species is disclosed by Conkle et al in the flow chart of Page 3.

Regarding claim 42, see Conkle et al in various Tables, ex. Table 5 regarding ppm level of metal ions.

Regarding claim 43, Alamine extractant is disclosed by Conkle et al at page 3.

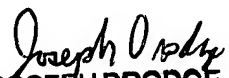
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

January 27, 2006

  
JOSEPH DRODGE  
PRIMARY EXAMINER